Notebook Series -- Notebooks by Experimenters Other Than Edison
General Experiment Books -- Z. P. Halpin Books
Notebook N-13-03-14

This notebook was used by Zachariah P. Halpin during March-July 1913 for experimental notes on a variety of subjects. Most of the entries pertain to the home projecting kinetoscope and to disc and cylinder phonographs. Included are tests on lenses and arc lamps for the kinetoscope, tests on various types of disc machines, and experiments on acetylene burners and miner's safety lamps. Also included are a few notes relating to battery tests. One entry contains a "verbatim" transcription of instructions from Edison. The work on disc and cylinder machines is continued in N-13-06-13 [not selected]. The book contains 37 numbered pages, which are preceded and followed by numerous unnumbered pages; approximately 100 pages have been used. Several pages have been removed from the book.

3-14-13

Voltage Regulator.
Voltmeter Type Relays.
Light moving parts not affected by rolling owing to small inertia.
Same to act thru two solenoids actuating motor circuit.
Mr. Gall thinks the idea good and says the present type will not work.
Saw Mr. Ward regarding the two installed in his place.
Measurements - Base 8 1/8" x 4" x 1"
Box - overall 6" x 2 5/16 x 3 3/4 x 2 5/16"
Model 30' Nos. 1262-1263
108 to 112 volts - Same supposed to ring a bell - Mr. Ward says they have not worked since installation. Why?
See Hanford who installed them.
Saw Purchasing dept. to get price which was $25.00 10% discount $22.50 net.

Reported to Mr. H.
He is having one installed to drive motor direct.

Cabinets for wireless sets.
Prints E-62
Std - B-2 side suspension bottom less trays 2 to 12 cells.
E-64
Std. B-4 Side Susp. Bottomless Tray 2-8 cells
E-66
Std. B-6 " " " " " " "

Cab. to have double walls - adj. for ventillation, water proof etc.
not to exceed 6' in height.

Tries 5 tiers 2 each - too high and narrow

March 17. - Showed design made up for ~~Wa~~. 3 tiers - 4-4 & 2
Mr. H. decided he wanted all on one tier - with legs to keep off deck - Turned over to Mr. H for Drafting Room.

March 18, 1919.

Test of Acetylene Burners.
Norton's Design.

Orifices	~~.004~~ Mixing Chambers	Nozzles
.004	.093	.093
.006	.109	.109.
.007	.125	.125
.008	.140	
.009		
.010		

To be tested with acetylene at various initial pressures, higher than 3.5#/□".

.006 orifice
.109 chamber
.125 nozzle.
} 6# gas press: air holes open - orifice forward to limit - cone unsteady greenish blue 5/16" to 3/8" long.
Flame weak -
not enough air.
drawing ~~so~~ orifice back slightly - admits more air and obtain a pretty good flame.
This is an important point to be watched - is the relation poo. of ~~nozzle~~ orifice with respect to

air holes.
I notice the actual size of air holes seems to be of little importance the thing is the pos. of the orifice in the hole.
No doubt the pos. of the mix. chamber is here brought into play and determines to a large extent the gas stream.

Our adjustment enables one to shift air chamber forward - and air holes but not separately except to a limited extent.

Effect of going further forward. with goose neck is. air chamber etc or retarding the orifice.
~~all the way~~ Orifice in forward limit N.G. as described
3/32" (about) from this pos. a decided improvement.
3/16" (about) " " " still better
the cone becomes a better blue and more sharply defined

1/4" back - cone much longer - more pointed - not quite as clear as in last position. About the limit further movement - extinguishes flame acct of too much air.

Same orifice and nozzle .006 .125 changed mix. chamber to .093.
Not as good as .109 chamber the orifice has to be too far back from the chamber to get enough air.
It seems to me the amt. of air depends primarily on size of mix. chamber and the dist. from orifice to the opening thereon.
mix chamber .125
More sensitive to changes in size of air opening.
The dist. ~~from~~ of ~~orifice~~ orifice from its ~~back~~ forward is abt. the same as others.

Mix. chamber ~~.120~~ .140 little difference from .125 chamber pins. to air hole changes.
best with holes ~~wide~~ open

The same backward position of orifice required to get proper air supply.

Same comb. of orifice .006 and mix. chamber .140 with .109 nozzle little better than with ~~.093~~ .125 and still better with .093 nozzle. I think the .093 nozzle best. ~~better~~ Flame cleaner cut more business like this made in diam - seems to be a better color. Req. same position of orifice relative to mix chamber

Using .006" orifice .093 nozzle and .093 mix. chamber. I like best of all comb. with this orifice.
Have still to try .109 mix & .125 mix chamber
Best looking flame yet.

may be able to get same effect using larger orifice with larger mixing chamber and larger nozzle. Increasing dimensions of flame to burn more gas.

.009 ~~.008~~" orifice
With this style of burner & .008 orifice requires .140 mix. chamber if not more.
With .009" ~~.008"~~ orifice, .140 mix chamber and .109 nozzle or even ~~.09~~ .125 nozzle we get the best combination. It is evident that with this orifice the smaller mixing chambers are inadequate to furnish suff. air and the flame shows at once too much gas. This is true even at pressure as low as 4#/in. In fact it is worse at this lower pressure.
We need .140 mix. chamber.

March 19, 1913.
Norton Burner.
.007 orifice 7# gas pressure
.125 mix chamber
.125 nozzle.
Cone blue - clean cut - sharp
3/8" to 7/16" long.
orifice 1/2 way ~~from~~ bet. ends of air holes.
A very good flame.

~~Same~~ comb. with 10 to 11# pressure.
OK. - cant get pure blue cone
don't seem to be clear - whereas I used to get a perfectly clear blue - darker than this it seems.
May be due to acetone in the Presto-lyte gas. not in generator.

changed mix. chamber to .109 then to .093 with .093, .109, .125 nozzles with no apparent result except diff. shape of cone.
May be the cone is a little clearer with larger nozzle - being a little shorter and wider at base gives more complete combustion

10# press. .007 orifice, .093 chamber and .125 nozzle - get a very good flame. cone about 3/8" long a good blue - outer zone a pale reddish yellow. - we aught to get rid of this outer zone it should be colorless.
May be better with generator gas.
The size of mix chamber has little or no effect.

March 21/13.
Made tests on Norton's Burner.
using .010" orifice, .140" mix. ch. and .125 & .109" nozzle
Got a fine flame, with large clean cut cone apparently very intense.
Applied to mantle gave dandy brilliancy but when use for projection the results were very poor
Tried above on Prestolyte tank and generator but results were N.G.

Can only account for poor results by the fact that the large flame

striking the mantle spreads out covering the surface with a blanket of flame. The illumination passing thru this sheet is materially reduced and the projection is poor.

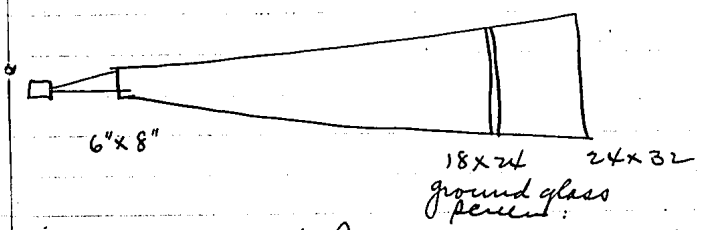
Tried same on the pastille - Keewit received from Dr. Green. Results a little better but still poor.

The pressure in these tests varied between 4#/□" and 10#/□" the higher pressures gave a little better illumination but not materially so.

Another type of Pastil was used with double jet burner striking pastil front and back the results were crude worse than previous tests.

March 22.

Worked on Day light idea.
Had a long shadow box made painted inside with black paint.



Used Nernst Lamp. 113-125 volt.
Got pretty good results indoors.

Changed illuminant to 30 c.p. 6 volt Tungsten Concentrated filament
The light intensity was better indoors.
Took the whole thing out into yard and found there that the light was punk.
Could hardly see the picture

3/24/13.

Excello Arc Lamps
Received two from H. H. Smith.
One globe broken.

Circuit –
+ side to series coil
series coil to resistance coil
res. coil to + carbon
+ carbon to – carbon
– neg carbon to – terminal.
Shunt coil – connected across arc with a trip in circuit – trip operated by a slider – which rises up to top as carbons burn out when reaches top trips shunt coil removing same from circ. series coils is opened when arc breaks.

Line voltage 125 to 129

$$\frac{125-90}{1.67} = \frac{35}{1.67} = 21-22$$

$$\frac{129-90}{1.67} = \frac{39}{1.67} = 23 \text{ or } 24$$

} B-2 Cells

#3324

19.35
1.93
9.68
2.42
$ 50 | 7.26
144.5

Excello Arc Lamps –
10 B-4 Cells
10 B-2 "
Line averages 127 v – varies bet 125-129.

Readings taken before any regulation was made.

Time	Voltage across Lamps	Battery	Amps.	Notes
9³⁰	87.5	38	10	voltage low on lamps
9⁴⁵	88.	38	10	high on cells.
10⁰⁰	87.5	37.8	9.5	1.9 v. per cell.
10⁰⁵	86.5	37.5	9.5	Should be
10¹⁰	86.	37.5	9.2	1.67 v. per cell.
10¹⁵	86	37.5	9.2.	
10²⁰	87.2	37.	9.2	
10²⁵	87	37	9.0	
10³⁰	87	37	9.0	
10³⁵	87	37	9.0	arc lamps
10⁴⁰	88	37	9.0	45 & 43
10⁴⁵	88	37	9.0	
10⁵⁰	89	37	9.1	
10⁵⁵	88.5	36.5	9.1	
11⁰⁰	86.5	36.5	9.5	#1 unsteady of broken globe
11¹⁰	87.5	36.5	9.5	arc travels considerably.
11¹⁵	87.5	36.2	9.	not so noticeable in #2
11²⁰	86.5	36.2	8.8	

9^{50} Current averaging about 9.5 amps
9^{55} " varies bet 9.3 & 9.7 amps.

The cells are made up of two 5 cell trays of B-2 cells and 2 5 cell trays of B-4.5. The B-4 were taken from shed - found idle and water low.
One set of B-2 was partly charged taken off charge in garage - the other B-2 tray was taken from C. Powers place evidently in discharged state.
Put water in all cells before starting 1/2" to 3/4" above top of plates.

Tray 1	B-2 -	9.5	
2	B-4 -	9.5	at 10^{15} AM.
3	B-4 -	9.5	
4	B-2 -	9.2	
		37.8	

10^{20} - 10^{25} Around 9. amps.

10^{55} Lamp with broken globe very unsteady

	Arcs	Cells	Amps.	
11.25	86	36	9.0	#1-44.5 #2 43.5
11.30	86.5	36	9.0	
11.35	86.	36	8.8	
11^{40}	86.5	36	8.9	
11^{45}	86.5	36	8.9	Unsteady arcs - much
11^{50}	88.5	36	8.8	feeding and general
11^{55}	89	36	9.	unsteadiness. Prob. caused by broken
1200	89	36	9.	globe and resulting drafts -
100	90	36	9.5	
10^{5}	90	36	9.5	#1-45 V #2 45 V.
11^{5}	89	35.9	9.0	
1^{30}	91	36.5	11.5	unsteady - varying bet.
1^{35}	91	36	10.5	10 and 11
1^{40}	91	36	10.	1-B-2 - 9.1
1^{45}	91	36	10	2-B-4 - 9.0 } 1.40 P.M.
200	91	35.8	10	3-B-4 - 9.0
205	91.5	36	10	4 B-2 - 9.1
2^{10}	90.5	36	10.5	
2^{15}	91.	35.7	9.8	
2^{20}	90	35.5	9.0	
2^{25}	89.2	35.5	9.0	
2^{30}	88	35.5	9.0	arc unsteady -
2^{35}	88.5	36.0	10.0	may be due to broken globe.
2^{40}	87.5	36.0	9.5	
2^{50}	88	35.5	9.5	
300	90	36	9.8	

Time	Arcs	Cells	Amps.	
305	91	35.5	10	
310	89	36.2	10.5	
315	89	36.	10.0	
320	88.5	35.5	9.6.	
325	90	35.8	9.3	
330	90	35.5	9.2	#1-45.5 #2 44.
335				
340				
345				
350	91.	35.5	9	
355	91	35.7	9.3	
400	90.5	36.2	10	
410	91	36	9.5	
420	91	36	9.5	
430	91	36	9.3	#1 46 #2 45

1 — 9.1
2 — 9-
3 — 9-
4 — 9-

125 × 10 = 1250 watts.

1250 × 7 = 8750 watt hrs

8.75 K.W. hrs.

90 × 10 = 900 watts $\times \frac{7}{1000} = \frac{6300}{1000} = 6.3$ K.W. Hrs.

$\frac{8.75}{6.3}$ 2.45 K.W hrs $\frac{2450}{30} = 81.+$ amp hrs.

$\frac{2450}{7} = 350$ watts

$\frac{350}{30} = 11.67$ amps.

11.67 × 5 = 58.35 amp hrs.

58.35 amp hrs. Say 60 ampere hrs. available at end of 7 hr. charge.

Owing to unsatisfactory conditions for B-4 cells and B-2 1/8" tube it was decided to stop test until B-2 Regular cells could be procured.

4/8/13.

Restarted test with 20 B-2 cells.
Put on at 900 A.M. 4/8/13.

36 v on cells
88 v arcs. } 900 am
10 amps

Time	Arc	Cells	Total	Amps.
900	88	36	124	10
1000	88.5	36.5	125	9
1100	89.5	36.5	126	9.2
1200	90	36	126	9
200	90	36	126	9
300	90	36	126	9

345 new carbons both lamps.

430	90	36	126	9

1/2 hour out for changing carbons.
7 hrs. charge at 9 amps ave.
7 x 9 = 63 amp hrs.

530 P.M. 4 amps. 29 volts.

4/9/13

800 am 1 1/2 6 volts.
old tray 5 1/2
2nd tray reversed
3rd " reversed
4th tray 1 volt.

4/9/13 Charge start 810

810	88.5	36.5	125	13 amps. Must to 10 amps.
1030	89	35.5	124.5	9 amps.
530 P.M.	86.5	36.5	123	9.1 "

On charge 9 hrs. 20 min.

Put on discharge at 530 4 amps.
Battery voltage 31 v. 4 amps.
Took off at 830 a.m. — 1 1/2 amps
Battery voltage 6 volts — 3 trays
reversed old tray 5 volts.
It seems that these cells are
not up to capacity.

830	89	35.5	10 amps.
100	89	35.5	9 amps.

Equals 4 1/2 hrs at 9 amps.

4/11/13

900 to 530 = 7 1/2 hrs at 9 amps
Total 4 1/2 + 7 1/2 = 12 hrs.
Then stood idle from 530 PM
4/11/12 to 900 A.M. 4/12/13.
When discharge was started
at 7.5 amp leadings over.

4/9/13 - Kinetophone Spring Motor.
Running free - 13 min 12 sec.
with mandrel no record - 92½ turns
13 min 12 sec.
with record no reproducer 86 turns
13 min 29 sec.
With record playing. 85 turns.
12 min 51 sec.
with pulleys & clutch. 63 Turns
10 min 20 seconds
Removed cord and it ran 3 min & 20 sec. longer total 13 min 40 sec.
With pulleys & clutch. 9 min 12 sec.
took cord off ran 3 min 43 sec. longer.

5 min 37 sec
3 min 31 sec.

Discharge of 20 B-2 Cells in conj. with Excello Arc Lamps
Complete charge 12 hrs at 9 amps covering two days and standing idle 15½ hrs. after end of charge.

Time	Volts	Amps
9 00	27	7.5
9 15	Owing to the low voltage	
9 30	I decided to charge for	
9 45	one hour to warm up	
10 00	the cells before discharging	

J.C. says to reverse and charge at high rate for a few hours.

Time	Volts	Amps.	
10 00	30	7.5 amps.	15 lamps
10 15	27.5	7 -	added one lamp. making 7.5 amps. 16 lamps
10 30	26.5	7.25.	
10 45	26.	7.25	"
11 00	25.5	7.2	"
11 15	25	7.2	"
11 30	25	7.0	15 lamps. 7.6 amps.
11 45	24.5	7.5	6.5 6.5 6.5 6.5
12 00	24	7.5	24.5 zero error +.5V.
1 00	23.5	7.5	
1 20	23.	7.5	

Time	V	A.	
1 30	23	7.20	
2 05	22.5	7.20	
2 15	22.5	7.20	
2 25	22.5	7.20	6-6-6-6 + ½ V. Error zero.
2 40	22.0	7.00	16 lamps 7.5 amps.
2 50	21.5	7.5	
2 55	21.5	7.5	
3 00	21.5	7.5.	
3 05	21.2	7.5	
3 10	21.0	7.5	
3 15	20.5	7.5	stop here bec. v. m has .5 v error.

4/14/13

Put on charge at 10 10 AM.
10 amps - arcs in series.
Off at ~~10~~ 5 10 P.M. 7 hrs charge.

3.7 amp. disch at 5 30 P.M.
1½ " " " 8 30 AM 4/15/13.
4 volts total voltage across
20 cells. .4 .6 1.4 1.3

New carbons in lamps.

4/15/13.

Charge	V.	Arc	amps
8.45 AM	34	89.5	10.
1.30 PM	35	90	10
4 10	36	87	9 amps.
5 40	36	89	9.

6 8/1

8 hrs charge
3 amps disch pt. 540 31 V.
2 amps at 8.10 4/16/13. 24 volts.
5 lamps burned 14 hr 30 m.
~~8.30 AM~~ Lamp fairly Fill-
cant on of volts in morning
Started charge at 8 30 AM.
10 amps.
Off at 5 30 — 7½ hrs ~~disch~~ charge

Put on discharge at 4 35
6 lamps 3 amps. 29.5 volts.

4/17/13

at 8 30 AM. found 16 lamps on
and batteries completely discharged
some one had evidently played
with apparatus leaving 16 lamps
on. Nothing can be paid of this
run.
Put on charge 8 55 AM 4/17/13.
off at 5 10 — 8 15 hrs.
Disch 3 amps 5.30 P.M. 29 volts.

8.45 am 4/18/13 20 v. 2.5 amps.
Charge 8.45 am. 91
Arc 91 Cells 33 13 amps.
Off at 4.45 P.M.
8 hrs charge.
Put on disch at 5.00 P.M. 3 amps 6 lamps
29 volts to 8.00 a.m. 4/19/13.

H.P.K. Lens Tests. - Mess. Brown & Earle.
3 pairs of lenses similar to our A, B & C systems and each pair comprising a Stereopticon & a Motion Picture Lens.

B System -
Stereopticon - Our standard does not cover the lantern slide i.e. we are unable to get centre and outer edges in focus at same time. The new lens is superior to standard and covers very well the entire lantern slide.

Chromatic - neither lens shows any material chromatic aberration

Distortion - Slight distortion outward in our standard very near the edge but this is in circle and not, with, in the stereopticon aperture

Stereopticon & M.P. both seem to be of slightly longer focus than our standard.

C25

The M.P. lenses gives ~~a little finer~~ about same detail ~~better~~ same resolving power than our lens. Maybe our own is slightly better. The covering of picture is O.K. in M.P. work with our own lens and not similar to the stereopt. icon.

On the M.P. prop. there is great uncertainty the new lens shoots a slightly smaller picture and may on that acct not give same detail. One moment I was impressed that new lens was better then changed to other view.

Miners Safety Lamp P.M.
4/16/13 On at 12 45 off at 6 30 A.M.
5 3/4 hours.
4/17/13 on at 8 15 a.m.

4/17/13.

Note instructions for connecting Eck Booster to H.P.K. arc machine.

Name Plate Data

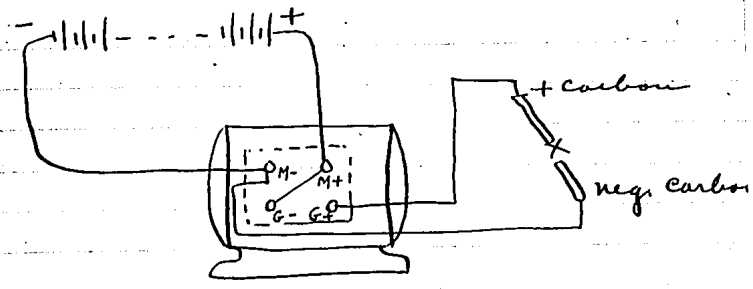
Eck Dynamo & Motor

R.P.M.	2500	Motor
Volts	20	
Amps	5.5	
D.C. No.	17753.	
Winding	Shunt	

Volts	20	Generator
Current	4 amps	
K.W.	.08	Winding —

Instructions

The booster has four binding posts. The two upper posts marked M are for motor connections, the one to left is negative and the one to right positive. The two lower posts marked G are for generator connections, the one to left being negative and the one to right positive. See diagram of connections.



Connect neg. terminal of battery to b.p. (M-)
" pos. " " " " " (M+)
Connect post M+ to G- with short jumper.
Connect (M-) to lower or neg. carbon
" (G+) to upper or pos. carbon.

Made 3 copies (type written) with diagram of connections on each.

H.P.K. Lens Tests. – William Brown & Earl.
After testing these lenses I came to conclusion that the new Stereopticon lenses are superior to our own stereopticon.

With our own stereo it is not possible to get whole slide in focus at one time we can get either centre or edges but not both together – The new stereo covers entire slide very well.

With ~~the~~ our own stereo there seems to be a little distortion in the outer field – this is not present in the W.B.E lens.

Chromatic aberration is very slight in both lenses. The ~~limited~~ small size of picture we were able to project made this observation limited.

M.P. lenses – ~~to~~ B & L. seem to be superior with them was able to get a much sharper image, covers better. The outer edges are confusing ~~at~~ of framing device interfering, causing a poorly defined image (spot).

M.P.

A system B & L. 20 1/4"
A " W.B & E 20 1/4
B & L. seems a mite clearer in detail – coloring about equal
focus about equal

Stereo A system –
new 27" circle
old 30" "
new – no color covers all spot
clearer focus.
old – color decided – don't cover
small pict. makes little diff
in covering power.
old 21" oblong
19" oblong

B System.
New 29" M.P. don't cover all spot – not as clear as B & L.
no color to speak of.
Old. – 32" M.P. covers slightly better – a little better detail
no color to speak of.
New 29" – ~~M.P.~~ stereo pticon ~~[illegible]~~
old much better than old.
37" stereo, on old ~~[illegible]~~ good focus

C. System –
B & L. 36" M.P. covers well no color
~~to speak~~ ??
Wm. B.E. 32" M.P. don't cover no color.
B & L 36" stereo no color dont cover
Wm B E 32" " " " covers fairly.

Week Beginning April 21st, 1913.
A.M. – Replaced Excello Arc Lamps.
Tested new H.P.K. Lamp House.
Turned over to drafting room.
Worked with Rudolph on quality reflector test.
P.M. – Acetylene Generator & H.P.K.
Showed in committee room for Mr. H.
Evening again showed in committee room for Mr. H.
Asked Mr. H. for something to do.
Friday – A.M. Took up acetylene instruction with Sophie – to complete same – promised new tracing Monday or Tuesday.
Straightened out files of my own.

Prepared and gave demonstration of H.P.K and Prof. P.K. machine to Major Croxton U.S.A.
Got ready in comm. room then had to make way for talkies
Went to Ramseys Room.
Took all day before I got through.

C. System –
B & L. 36" M.P. covers well no color
~~to speak~~ ??
Wm. B.E. 32" M.P. don't cover no color.
B V L 36" stereo no color dont cover
Wm B E 32" " " " covers fine.

Week Beginning April 21st, 1913.
A.M. – Replaced Excello Arc Lamps.
Tested new H.P.K. Lamp House.
Turned over to drafting room.
Worked with Rudolph on quality
reflector test.
P.M. – Acetylene Generator & H.P.K.
showed in committee room for
Mr. H.
Evening again showed in committee
room for Mr. H.
Asked Mr. H. for something to do.
Friday – A.M. Took up acetylene
instruction with Sophio – to
complete same – promised new
tracing Monday or Tuesday.
Straightened out files of my own.

Prepared and gave demonstration of
H.P.K and Prof. P.K. machine to
Major Croxton U.S.A.
Got ready in comm. room then
had to make way for talk in
went to Ramseys Room.
Took all day before I got
through.

Saturday - 1909.
Monday 1909.
Tuesday 1909.

$\frac{25}{5} \times \frac{9}{5} = 45$
$+ 32$
$80°$ F

90°

Magnesia & Thoria withstand exceedingly high temperatures but conduct electricity only with great difficulty.

Mixtures of two or more oxides have a lower fusing point generally than that of either.

Vaporization point is not necessarily lowered in fact thoria & ceria used in Welsbach mantle make quite a stable mixture or chemical combination, while ceria alone or uncombined is somewhat undesirable oxide from its rather marked tendency to vaporize.

Nernst Lamp glower 85% zirconium oxide & 15% of yttria earths.
Yttria means in reality a mixture of many oxides occurring together in certain minerals and closely allied in physical & chemical properties

Mr. H. told me to get 4 or 5 good acetylene burners –
Went to Mr. Ries. – Said committee took 6 – all in stock.
Went to Mr. Farrell and obtained 4 ~~of~~ he retained one which I think Smith has in H.P.K. film testing room No 1.
4th Tested – found too much gas brazed the hole and obtained a better ~~the~~ flame but not as good as desired.

2nd No 2 – Obstruction in goose-neck between mixing chamber and nozzle – cleaned out and burner is O.K.
3rd No 3 – Obstruction in goose neck – seemed liked solder. – Removed most of obstruction now O.K. 4th – No mixing chamber

4/~~29~~/13.
Tested acetylene burners with H.P.K. machine – obtained 3 good ones which I turned over to Mr. H.

4/30/13.

Received from Mr. Gall a test film to be run for wear test. To be run continuously to break down.

Composed of Stock film and a special combined in one continuous film.

Mr. G. says should run about 700 times.

Reported - May 7, 1913.

Report contained following - lengths 82' of new film and 82' of old film.

Both films measured .006" thickness on micrometer.

The new film showed wear on only one side - Edison on both sides - Edison showed more wear on both sides than new film on the one side.

New Welsbach Mantles - Small diameter.

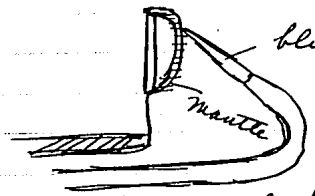
Received some of above on May 8, 1913.

Set up in H.P.K. machine with Prestolyte tank and got only a fair picture. The room however was not dark enough for a suitable test. The entire film becomes incandescent and the edges also so that the spot is not much smaller if any than on the old mantle.

Ran tests on B. system with generator - using 1/2 in carbide from Acetylene Gas Co. instead of Miner's Lamp Carbide of Union Carbide Co. With this combination I got much better results than with prestolyte tank - in passing the carbide acted very satisfactorily the pressure was very steady - used a new restriction plug. The pictures I think were superior to any I have obtained

in the same room - my room - with the other mantles.

To get effect of real dark room returned in evening and tried again. The pictures were pretty good - my screen is brim - tried another screen and found better with maybe too much reflection - all pictures are grey - bad - Is this owing to the large source of light. The features are hardly discernable and expression is nil. Ran mikes there.
Used pressures up to 6# the higher pressures undoubtedly are better.
In using this smaller diam. mantle we are confronted with a serious objection present but not as bad in the old mantle that is the flame - viz - the light passing thru the flame - we may improve by striking the ~~so~~ mantle lower. As it was had to hot mantle very high to get spot to cover aperture. If we hit low it brought spot too high. Will try lowering the burner and striking the mantle just above the bottom edge.



The burner shape is not very good it shoots too long a cone especially with the higher pressures - this increases the length of cone and adds to the above trouble.

Another trouble is with the present wire contrivance for a holder it is hard to get the burner mantle in proper line with the condenser.

I think there is somethg improvement in this new mantle but may mean a little changing to get the best results.

C41]

May 8/13.

This A.M.: set up 2 machines one with old mantle and one with new. The old mantle gave more light. Showed up better. Was not exactly satisfied with the setting on the ~~Dr~~ new. Both pictures were good considering that the room was only fairly dark.

The new mantle was one of the #21 containing extra ceria. This according to the Welsbach letter received to day causes a yellow light. I was under the impression as was Mr. Gall & Dr. Goldstein that the increased ceria would cause the light to be white.

Must try No. 20 and make new adapter. Requires better setting of mantle with respect to the lens.

May 13/13

Jones Motor - To Conduct Heat Test.

3 Thermometers 2 - 100° C Landly
1 - 220° F. Smith

~~Put on charge~~

Started motor 1:30 P.M. found batteries discharged - J. said they were O.K. Sat. looks like a leak on the lines as we got only 37 volts with 52 cells. 10 amps no load in motor 8 amps in motor field -

Put Battery on charge at 1:45 P.M. 100 amps about. 100 amp. meter with improvised shunt - Shunt reduced ammeter reading from 90 to 55 a reduction of 40%

60)100
166 amps cal. current for 100 ampere reading.

~~Put on~~ Dining motor with Edison Type motor - to obtain friction temperature rise

Brush friction on commutator.
Started run at 2 50 P.M.
Room Temperature — 25.5° C.
Stopped at 3 50 P.M.
Commutator 90° F
$25.5 \times \frac{9}{5} = 45.9 + 32 = 77.9°F$

Tank off charge 445

Heat Run. Room Temp. 19°C

Comm. — 20° C.
Field Coils — 20°
Pole Tips. —
Yoke — 20° C
Arm — 20° C

Start 8 40 a.m. No Load.
Volts — 50 — 60
Amps Arm. — 27
Amps Field — 13
R.P.M. — 1400 — 1600

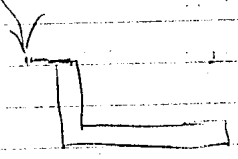
	V.	A.	Fia.	R.P.M	
9 10	57	100	9.7	1640	55 cells on charge
11 10	53	100	8.5		

C45

Temp. Rise

YOKE outside 56° C. — 20° = 36° C
FRAME (FRONT) 54° C. = 34
FRAME (REAR) 45° C. = ~~25~~
COMM. 60° C. = 40
FIELD. 86° C. = 66
ARM. 171° F.

171 * 32 = 139 × 5/9 = 77° = 57°



OUTSIDE READINGS.		RISE
YOKE	155° F.	~~[illegible]~~ ~~[illegible]~~ 48.3° C.
FRAME (FRONT)		
FRAME (BACK)		
COMM.	75° C.	55° C.
FIELD	107.5° C.	87.5° C.
ARM.	(87° C.	67° C.) 89° C 69° C.

NO LOAD AT 1700 REVS. BRUSHES ON
60V. 9A.

Driv. Motor. V.	Amps	Test F. Cur Amps	Speed Driver	
60	9	0	1700	Br. on ✓
65	30	8.65	1700	" " ✓
65	8	0	1700	" off.
65	9.5	0	1700	" on.
62	3.2	11	1700	" " ✓
~~65~~			~~2250~~	

Driving Motor.
65 7 — 2250 free

65
30
1950

6V
3A
18
146
194

Fi	V	Amp	RPM	Brushes
2	65	12	1700	down
2	65	11.5	1700	down
2	65	11.2	1700	
2	65			

30.5

Motor

V.	Amps	Field	Fi.	R.P.M.	Brushes
64.5	30	1.85	10.6	1700	on
64.5	29.5	1.85	10.6	1700	
64.5	29.5	1.85	10.5	1700	
61.5	9.0	1.85	0	1700	
61.5	9.2	1.85	0	1700	on
61.5	9.2	1.85	0	1700	
61.5	6.5	1.85	0	1700	
61.5	6.5	1.85	0	1700	
61.5	6.5	1.85	0	1700	
63	18	1.85	10.8	1700	
63	17	1.85	10.7	1700	
63	17	1.90	10.5	1700	
63	17	1.83	10.6	1700	
62.5	19	1.83	10.9	1700	
62.5	18.5	1.82	10.8	1700	
62.5	18.0	1.82	10.8	1700	

64.5
30
1945.0 watts

61.5
9
553.5

1945
553.5
1392.5

61.5
6.5
3075
3690
399.75

553.5
399.75
153.75

~~64.5~~ 63
18
504
63
1134

1945
1134
811

V	Am	Fi	Fi.	RPM
62.5	19.	1.85	10.6	1700
62.5	18.5	1.85	10.5	1700
62	9.5	1.85	0	1700
62	9	1.85	0	1700
61.5	9.2	1.85	0	1700

2.85
63
84
168
179.4

1945
179.4
2121

61.5	9.5	1.85	0	1700	brushes
62	16.5	1.85	10.6	1700	
62	16.5	1.85	10.6	1700	brushes
62	16.5	1.85	10.6	1700	
62	7.5	1.85	0	1700	
61.5	7.5	1.85	0	1700	brushes
60.5	7.0	1.85	0	1700	
60.5	7.0	1.85	0	1700	

Fields on brushes on

62.5	62.0	62
19	9.5	16.5
562.5	310	310
625	558	372
1187.5	589.0	62
1023.0	443	1023.0
1645	146.0	

18

63 62.5
18 19
562.5 562.5
625 625
11.3 1187.5

62
61.5
60.5
60.5
4 | 245.5
61.1

61.1
7.25
725
725
4350
442.975

1187.5
589.0
598.5

1023
443
580.0

151

Motor			Test Motor		
V.	Amps	Fi Amps	Fi Amps	RPM	Brushes
62.5	19	1.83	10.9	1700	on
62.5	18.5	1.82	10.8	1695	"
62.5	19.	1.82	10.6	"	"
62.5	19	1.85	10.6	"	"
62.5	18.5	1.85	10.5	"	"
62	9.5	1.85	0	1700	on
62	9.0	1.85	0	"	"
61.5	9.2	1.85	0	"	"
61.5	9.5	1.85	0	"	"
247.0	247.0				
61.75 × 9.3 = 573.6 watts					
62	16.5	1.85	10.6	1700	off
62	16.5	1.85	10.6	"	"
62	16.5	1.85	10.6	"	"
62	7.5	1.85	0	1700	off
61.5	7.5	1.85	0	"	"
60.5	7.0	1.85	0	"	"
60.5	7.0	1.85	0	"	"
244.5	29.0				
61.13 × 7.25 = 443 watts					

Calculations
from opp. page

62
15.5
330
990
10 x 3.0

573.6 − 443 = 130.6 watts

62.5 × 19 = 1187 / 3561
62.5 × 18.5 = 1158 7316
62.5 × 5 | 5877
1175 × 1.0

62 × 9.5 = 555
62 × 9.0 = 558
61.5 × 9.2 = 566
61.5 × 9.5 = 584
4 | 4443
573

1175
573
602

602
557
1159
579
1.5
3.0

1025 150

62 × 7.5 = 465
461
442
442
4 | 1774
443

1025
443
582

573
443
130

Volts	Amp	Field	R.P.M.
57.5	100	9.6	1600

Monday May 19/13.

Volts	Amps	Field	R.P.M.
60	100	9.9	1700

$\frac{60}{57.5} = \frac{1700}{x}$

$\begin{array}{r} 402500 \\ 575 \\ \hline 977550 \end{array}$

$60x = 977550$

$= 1630$

Test of Disc Machine Type A-60

Three machines
5M 754 — oak finish
" 909 mahogany "
" 759 oak finish.

#754 —
Speed when received — Indicator reads — slow at 1/8" —
75 — 78 — 77 — rewind 78.

Changed regulation index to 80 flat.
Run 80 zero record.
" 78 one minute elapse between readings.

With record 77 — 76 — 75 rewind
no record — 79 } 78.5.
76
76

Changed index to faster point now over 0 in figure 80.
Speed without record 80
after rewind.
78.

Will rewind and take speed during 1st 3rd 5th minutes

I am now of opinion that speed falls off as spring unwinds.

Test #1 - without record

Speed
1st - 79
2nd - ~~79~~
3rd - 79
4th -
5th -

minutes

1st second begins after 10 secs all to get up to speed.

Changed dope - will take 1st minute ~~second~~ - and - every other ~~30 sec~~ allowing 30 seconds between

1st - 79.
2nd - 78
3rd - 78
4th - 76

Changed speed ind. to faster -
80 - 15 sec. bef
79 -
78.5 - Record used
78 - so far o
74

Rewind - with rec.
76 same under setting as
76. above.
76 When end of record was reached - started one and it did not get half way thru before it came to stop. The speed was off all the way on the replay.

Record - On The Road to Mecca

45.

Monday May 19th -

A-60 Disc Machines.

#754 - Found adjusting knot loose on shaft. adj. to speed so with "On the Road to Mandalay".

Runs 83 r.p.m. without record. -

Date		with	without	
19	300	80	83	
19	400	80	83	80 at end 76 restarting
20	830	79-78	81	
	1030	80-81	83	
	100	84	87	Don't Stop
	400	86-85	88	
	530	87-86	88	
21	830	85	87	
	1030	89	89	Don't start
	1500	87	89	
	130	87	90	

Machine #759 — Oak.
adjusted to 80 rpm with
On the Road to Mandalay on
speaker on —
Runs at 83 free — no
record on

	with record	without
19 3.00 —	80	83
" 4.00	83	85
20 8.30	87	89
10:30	92	93
100	9✓	94 Don't Start.
215	80 Adjusted - speed here.	
400	8✓	84 Don't start.
830	8✓	85
830 (21)	8✓	85
1030	83	85
12	8✓	85
130	83	86

Mach 909 — Mahogany

Wont start. — when I
start by hand it comes
up to proper speed 80
rpm — with On the Road to
Mandalay — speaker down.
needs adjustment.

	Time	with	without	
	300	80	85	Don't Start.
	430	80	83	
20	830	78	82	
	10:30	77-78	83	
	100	79	81	
	400	79	81	
	530	79	82	
21	830	80		

Got out of adjustment in —
apparently — readjusted
830 am. at 80 —
The speed adjusting knob
does not work at all satisfac-
orily — a decided movement
had no effect upon the
speed.

Machine 907. Record on

11.30 –	80	—
May 21/13.	77	– 79. not tight
	80 –	82 wound
	79 –	
	80	
	77 –	weak spring
	79	
130.	82.	85

Changing the position of Index
First set machine to run
80 —
#759 —
I set this machine to run 80 rpm. and by turning index to slow – then turned to slower when the pos. fell as low as 60 – in bringing speed back I found at 80 rpm. the index was in a position fast forward of the position that it had a half hour before was running at 82
There seems to be nothing pos. about the speed regulation at times a great change in index will result in little or no change in speed at other a slight change in index will cause a great change in speed.

When I turned to slow and brought back to pos. at which speed was just 80 (15)

the speed dropped about 40 the result was indecisive

Threw index to limit for speed reg. 86,

Returned to 80 mark but speed remains 86.

Conclusion — The Governor disc lever in contact with adjusting needle does not follow the needle.

The great changes in speed can only be explained by the above —.

Machine 704 —
Reg to 80
Turned down and brought back to above point. speed 80.

Turned to extreme fast speed about 100 — Turned back to same place — speed about 98 —
Turned down and back speed 80 again

Machine 909.
Adj to 80
Turned down & back down 79 — 1/2" down.
Back 80.
Forward & back 100.
Down & back 90 —

12 Readjustment

	759		754		909	
	without	with	without	with	without	with
400 5/12	83	80	83	81	82	80
830 5/12	88	86	82	80	82	80
1048	86	86	82	79	84	83
130 PM.	90	88	82	80	86	84
330	90	88	83	81	88	85
530.	90	87	82	80	90	88
8.30 (13)	100	92	82	80	90	88
1030	102	94	82	80	91	89.
130	100	95	81	79	92	90
Readjusted	82	80.				
330	92	90	81	80	94	91
530	Nicolai		81	80	93	90
			82	80	94	90

new Governor
Revving 83 r.p.m.
Oil stopped
Bengal 85.

Thursday - May 22nd, 1913.
#754 refused to start twice during morning up to 10.00.

759

Speed of felt Governor specide
5/22/13 130 - 80

New Fitter makes Governor 84 when received at 330 5/23/13.

 This page follows opp. page

5/28	8 30	80. adjusted here not adjust when received
"	9 30	80
"	10 30	80
"	11 30	80
"	12 30	80
"	1 30	80
"	2 30	80
"	3 30	80
"	4 30	81
"	5 30	82
"	6 00	82
5/29	8 00	82
"	9 00	81.
"	10 00	81
"	11 00	81+82
"	12 00	81·82
"	1 00	82
"	2 00	81+82
"	3 00	82
"	4 00	82
"	5 00	82
"	6 00	82
6/2	8 00	81
"	9 00	81
"	10 00	81 - with air 79 to 80
"	11 00	79
"	12 00	79 Continued on page 21.

Readings on New Fibre Friction Governor - each reading checked.

May 23,	3.30 P.M.	84	when received
" "	3 30 "	80	adjusted
" 24	8 30 AM	82	
" "	10 30	83	This governor
" "	12 00	83.5	makes con-
" 26	8 00	84.0	siderable noise
" "	9 00	84	
" "	10 00	84	
" "	11 00	85	
" "	2 00	85	
" "	3 00	85	
" "	4 00	85	
" 26	5 30	86	

May 26, 1913 5 30 - Governor rattled badly - Mr Luhr saw it - discovered that friction ring butted against collar on governor friction disc

May 27, 1913 - 8 30 AM turned over to Mr Luhr - made hole in friction ring larger and replaced less with solid metal not of sheet & punching. Returned 5/28 82

Machine # 759

Date	Time	Speed Record	Speed Without Rec.	
5/19	300	80	83	
"	400	83	85	
5/20	830	87	89	
"	1030	92	93	
"	100	92	94	
"	215	89	82	adjusted here.
"	400	82	84	
"	530	82	85	
5/21	830	82	85	
"	1030	83	85	
"	1200	82	85	
"	130	83	86	
"	400	80	83	adjusted here.
5/22	830	86	88	
"	1045	86	88	
"	130	88	90	
"	330	88	90	
"	530	87	90	
5/23	830	92	100	
"	1030	94	102	
"	130	95	100	
"	130	80	82	
"	330	90	92	
"	400	Sent to Mr. Nicolai as per memo from Mr. Hutchison.		

Continued on Page 23.

Machine # 754.

Date	Time	Speed With Record	Speed Without Record.	
5/19	300	80	83	
"	400	80	83	
5/20	830	79	81	
"	1030	80	83	
"	100	84	87	
"	400	86	88	
"	530	87	88	
5/21	830	85	87	
5/21	1030	87	89	
"	1200	87	89	
"	130	87	90	
"	400	81	83	adjusted here
5/22	830	80	82	
5/22	1045	79	82	
"	130	80	82	
"	330	81	83	
"	530	80	82	
5/23	830	80	82	
5/23	1030	80	82	
"	130	79	81	
"	330	80	81	
"	530	80	81	
5/24	830	80	82	
"	1030	80	82	
"	1200	80	82	

Date	Time	Speed with Record	Speed without Record
5/26	8.00	80	82
"	10 00	82	83
"	1 30	82	83
"	3 15	82	83
"	5 30	82	84
5/27	8 30	81	83
"	10 45	81	83
"	1 30	82	84
"	3 30	82	84
"	5 30	82	84
5/28	8 30	81-82	83
"	10 30	82	83
"	1 30	82	83
"	3 30	82	83
"	5 30	82	83
5/29	8 30	81	82
"	10 30	81	82
"	1 30	82	83
"	3 30	84	86

~~300~~ Pm 5/31/13.
Main Spring broke - repaired and brought back on 6/6/7.

Machine #909.—

Date	Time	Speed With Record	Speed Without Record.	
5/19	300	80	83	
5/19	400	80	83	
5/20	830	78	82	
"	10 30	78	83	
"	100	79	81	
"	400	79	81	
"	5 30	79	82	
5/21	830	80	82	Readjusted

This machine got out of adjustment at 5 30 - 5/20/13, and the speed had to be adjusted

5/21	11 30	80	82	
"	130	82	85	
"	400	80	82	Readjusted to note effect of changing index
5/22	830	80	82	
	10 45	82	84	
	130	84	86	
	3 30	85	88	
	5 30	88	90	
5/23	830	88	90	
	10 30	89	94	
	130	89	92	
	3 30	91	94	
(95)	5 30	90	93	(over)

Date	Time	Speed with Rec.	Speed Without Rec.
5/24	10 830	90	93
	1030	91	94
	1200 M.	92	94
5/26	800	91	94
"	1000	91	94
"	130	91	94
"	315	92	94
"	5/30	91	94
5/27	830	93	94
"	1015	92	94
"	130	92	94
"	330	92	94
"	530	92	94
5/28	830	92	94
"	1030	92	94
"	130	95	97
"	330	95	97
"	530	95	97

Continued from Page 14.

6/2	100	79
"	200	79
"	300	79
"	400	79 To 80
"	500	80
"	600	81
6/3	800	77
"	900	80 — ?
"	1000	84
"	1100	84
"	1200	85
"	100	86

Cleaned out air between gears and tightened screw in worm — the speed changed to 84 rpm

"	130	84
"	200	85
"	300	86-87
"	400	87
"	500	88
"	600	88
6/4	700	88
"	800	
"	900	
"	1000	
"	1100	80

#759 Received mach. 6/2/13

When received mach. speed was 102 R.P.M.
Adjusted to 80 R.P.M.

Date	Time	Speed Record	Without Rec.
6/2	2 00	80	82
6/2	3 30	74-5	

Unable to adj. speed with indicating knob - speed changes from least vibration if mach. is round while playing the speed changes very much - about 10 rpm.

6/2	4 00	81	83
6/2	5 00	81	83
6/3	8 30	82	84
"	10 30	80	82
"	1 30	78	82.5
"	3 30	67	70
"	5 30		

6/4/13 — Returned to Nicolai for further adjustment.

Machine 909 with new fibre friction governor — m. record.

6/4/13	9.00	am	80 r.p.m.
"	10.00		80 "
"	11.00		85 "
"	12.00		86 "
"	100	Pm	87 "
"	200		85 "
"	300		85 "
"	400		85 "
"	500		86 "
"	600		86 "
6/5	800	am	86 "
"	900		86 "
"	1000		86 "
"	1100		87 "
"	1200		87 "
"	100	Pm	87 "
"	200		87 "
"	300		87
"	400		87 "
"	500		87 "
"	600		57 "
6/6	800	am.	88 "
"	900		87 "

Spring broke at 10 am 6/6/13 — 2nd to truck

New H-150 — Disc with new gov adjusted to 80 — mch record.

6/4	900		80 r.p.m.
6/4	1000		80 "
6/4	1100		80 "
"	1200		81 "
"	130		83 "
"	200		85 "
"	300		85 "
"	400		85 "
"	500		84 "
"	600		84 "
6/5	800		83 "
"	900		83 "
"	1000		83 "
"	1100		84 "
"	1200		84 "
"	100		85 "
"	200		85
"	300		85
"	400		86 "
"	500		86
"	600		87 "
6/6	800		87
"	900		87
"	1000		87
(80) "	1100		89 Continued on Page 29.

Disc A-150 New Governor
Adjusted to 80 rpm.

Time	R.P.M
6/4-1000	80.
" 1100	80
" 1200	81
" 100	82
" 200	83
" 300	83.5
" 400	84
" 500	84
" 600	84
6/5 800	82
" 900	83
" 1000	83
" 1100	83
" 1200	83
" 100	83
" 200	84
" 300	84
" 400	84

6/5/13.

Mr Lurk took to take off high spots - Mr Ed. thinks high spots cause of ~~getting~~ changes in speed.

Drying heaver belt here

Disc M. A-60 #754

Adjusted to 80 R.P.M.

Date	Time	R.P.M. with accel
6/6	11 30	80
"	12 00	80
"	1 00	80
"	2 00	80
"	3 00	80
"	4 00	80
"	5 00	81
"	6 00	80
6/7	7 00	80
"	9 00	80
"	10 00	80
"	11 00	80
"	12 00	80
"	1 00	80
"	2 00	80
"	3 00	81
"	4 00	80
6/9	8 00	88
"	1 00	87
"	2 00	87
"	3 00	88
"	4 00	88

Continued on Page 32.

Continued from Page 25.

Date	Time	R.P.M. with accel
6/6	12 00	87
"	1 00	87
"	2 00	88
"	3 00	88
"	4 00	88
"	5 00	88
"	6 00	88
6/7	8 00	88
"	9 00	89
"	10 00	89
"	11 00	89
"	12 00	89
"	1 00	89
"	2 00	89
"	3 00	88-89
"	4 00	89
6/9	8 00	86
6/11/13	2 00	80
"	3 00	80
"	4 00	82
"	5 00	83
"	6 00	84
6-13-13	8 00	88
"	9 00	88

Continued on Page # 36.

[35]

New Irony Friction Disc.

6/9/13.

Time 10 a.m.	80 r.p.m.	adjusted.
" 11 00	80	"
" 12 00	80	"
" 1 00	80	"
" 2 00	80	"
" 3 00	80	"
" 4 00	80	"
" 5 00	81	"
" 6 00	81	"
6-10-13 8 00	79	"
" 9 00	80	"
" 10 00	80	"
" 11 00	81	"
" 12 00	80	"
" 1 00	80	"
" 2 00	80	"
" 3 00	80	"
" 4 00	80	"
" 5 00	80	"
" 6 00	80	"
6-11-13 8 00	80	"
" 9 00	80	"
" 10 00	80	"
" 11 00	80	"
" 11 20	75	G.U.E. Puts Oil on disc.

Date.	Time.	R.P.M.
6-11-13	12 00	75
"	1 00	75
"	2 00	75
"	3 00	75
"	4 00	75
"	5 00	75
"	6 00	75
6-13-13	8 00	74-75
"	9 00	74-75
"	10 00	74
"	11 00	74
"	12 00	74
"	1 00	74
"	2 00	74
"	3 00	62
"	4 00	60

Continued from Page 28.

Disc Mach. M.-A-60 # 754.

Date.	Time.	R.P.M. with record
6-9-13	500	88
"	600	88
6-10-13	800	87
"	900	87
"	1000	86
"	1100	86
"	1200	87
"	100	87
"	200	87
"	300	87
"	400	87
"	500	86
"	600	87
6-11-13	800	87
"	900	87
"	1000	87
"	1100	87
"	1200	87
"	100	87
"	200	87
"	300	87
"	400	87
"	500	87
"	600	87
6-13-13	800	85
"	900	84

Mach. # 754

Date.	Time.	R.P.M. with record.
6-13-13	1000	84
"	1100	84
"	1200	84
"	100	83
"	200	83
"	300	83
"	400	83
"	500	84
"	600	84
6-14-13	800	
"	900	
"	1000	
"	1100	
"	1200	

Continued from Page # 29

Date.	Time.	R. P. M. with record.
6-13-13	1000	88
"	1100	88
"	1200	88
"	100	90
"	200	92
"	300	92
"	400	92
"	500	92
"	600	~~92~~
6-14-13	800	~~88~~
"	900	—
"	1000	—
"	1100	92
"	1200	92
	200	88
	300	88
	400	88
	600	87

Stopped over Sunday to allow boys to put all time on the 6-14-6.02 machines and cylinder.

6/16/13	900 am	86
	1000 "	86
	1200	88
	200 PM	89

(21)

Frame

400	90	
600	92	Stopped over night
800	90	800 - 90
1000	86	1000 - 90
1200	86	200 - 88
200	90	400 → 80 Speed fell adjusted
400	88	6/19/13 620 PM. 82
600	87	
800	81	
10	83	
12	87	
6/18/13		
200	84	
400	84	
600	89	
800	92	
1000	94	
1200	96	
200	90	
400	98	
600	96	
800	94	
1000	98	
1200	100	
6/19/13 200	96	
400	94	
600	96	

Mach. #909

New Drory Friction Disc.
Speed 77 R.P.M. - Adjusted to 80

Date	Time	R.P.M. with meter
6-13-13	7:30	80
"	500	80
"	600	80
6-14-13	800	—
"	900	—
"	1000	80
"	1100	80
"	1200	80
"	100 PM	80
	200 "	80
	3 — "	80
	4 — "	80
	5 — "	80
	6 — "	81
	8 "	80
Stopped over Sunday		
6/16/13	800 AM.	80
"	1000 "	80
	1200 "	80
	200 PM	81
	400 "	81
	600 "	84
6/17/13	800	82

Ivory Lisc Mach. #909

	1000	82
	1200	80
	200	84
	400	80
	600	80
	800	80
	1000	76
	1200	78
6/19/16	200	79
	400	78
	600	82
	800	80
	1000	79
	1200	66
	200	76
	400	70
	600	70
	800	80 Spring Brake 9.10
	1000	
	1200	
6/19/132	200	
	400	
	600	
	800	
	1000	
	1200	

Mr. Edison's Instructions Rotating.
No 60 Disc.

Set all at 80 per and keep them going night and day - when they get to 90 Reset to 80, note all defects in the machine of every kind.
See every day if they will run a 12 inch disc from start to finish at right speed and after 12" record is played thru set speaker back and run until ear shows speed has dropped too far. Note for each machine full record and how far it got when run twice. This is to find how much margin we have.

Run cylinder machine continuously - get 20 records put on a new record each time until the twenty have been played then start over again. Set governor at 160 revolutions & change should it go to 170.
Keep same speaker on until Edison tells you to change

See that all machines are oiled to start with and then occasionally oil up say every 48 hrs.
Note every defect.

	1	2	3	4	5	6	a.p.
June 13	979	968	630	981	974	980	
10:30 PM	80	80	80	80	80	80	
12 —	82	74	81	86	84	82	
6-14-13 100	81	78	84	82	87	86	
200	84	79	88	81	86	83	
300	84	79	88	86	86	83	
400	84	79	88	86	86	85	
500	85	79	87	86	86	83	
600	84	79	88	86	86	83	
700	84	80	87	78	85	83	
800	95 adjusted	85	88	82	84	86	
900	80	83	89	83	85	84	160
1000	81	83	90·80	84	84	84	160
1100	80	84	82	85	[illegible]	[illegible]	160
1200	80	86	Nicolai	80	100	88	
100	81	84	took this.	81	adj 80	83	160
200	84	84		80	84	86	160
300	80	84	Nic.	83	86	86	160
400	80	83	"	82	87	86	160
500	79	85	"	84	88	86	160
600	81	82	"	79	86	87	160
800	80	83	"	80	89	86	160
1000	80	85	"	79	90/80 adj.	86	160
6/15→ 1200	80	84	"	79	81	86	160
200	81	84	"	80	80	86	160
400	80	84		80	83	86	160
600	86	84		80	84	86	160

Drony Disc – screw to brass

6/14/13	1030	80.	Adj here.
	1430	72	
	200	72	
	300	72	
	400	72	
	500	73	
	600	73	
	800	73	
	1000	73	
	12	73	
6/13/13	[illegible]	72	
	[illegible]	73	
	[illegible]	73	
	800	73	
	1000	74	
	1200	74	

June 13 – Found six A-60 Disc Machines Nos. 979, 968, 630, 981, 974 & 980 each bearing tag – "Special main spring worm shaft and barrel."

All machines were well lubricated oil and grease had been applied freely.

Adjusting preparatory to starting.

Had same trouble as before with this type – the speed does not respond to small changes in adjusting lever this is especially true when speed is over 80 and you wish to lower. It is also true the other way.

6/13/12 – Machine # 980 has a knocking sound in gears.

Mach. # 979 – in adjusting found that pointer on adj. knob was against cabinet and it was not possible to get 80 rpm without loosening set screw.

None of machines indicated 80
when speed was adj. to 80.
979, 968, 630 and 980 – "slow"
981 & 974 were "fast"

630 and 980 start with record.
979, 968, 981 & 974 fail to start.

630 does not start with record

When adjusting at start of test
Machine #980 changed from
80 to 90 while other five were
being adjusted
Machine 630 changed from
80 to 87
Think this was caused by
vibration.

Cylinder Machine
Speakers –
1. Standard Model K - Sapphire Ball
Started 900 am 6/14/13
Running 160 r.p.m.
at 1 o clock noted a
noise inside seems to
be cutting dog some
place.

Grinding noise [illegible] 1:31
in middle of record

Ivory Disc — Special

6/14/80 —	10 30 am	80	
	12 30 "	72	
	2 00 PM	72	
	3 00 "	72	
	4 00 "	72	
	5 00 "	73	
	6 00 "	73	
	8 00 "	73	
	10 00 "	73	
	12 00 "	73	
6/15/13	2 00 am	72	
	4 00 "	73	
	6 00 "	73	
	8 00 "	73	
	10 00 "	74	
	12 00 "	74	
	2 00 PM	80	not adjusted
	4 00	80	
	6 00	79	
	8 00	79	
	10	79	
	12	79	
6/16/13	2 00	80	
	4 00	81	
	6 00	81	
	8 00	76	

	1	2	3	4	5	6	7
6/15/13							
12 00	100/80	82	-	80	72	84	160
1 00	80	83	-	74	72	85	160
1 00	90/80	84	-	80	72	86	160
2 00	92/80	90/80	—	77	75	86	160
3 00	56/80	94/80		78	78	86	spring Blows
4 00	110/80	60/80	—	81	78	84	
5 00	88	84	-	82	70	84	
6 00	86	85	-	81	71	85	
7 00	87	83	-	81	70	84	
8 00	88	84	-	82	71	84	
9 00	88	79	-	80	69	85	
10	89	83	-	80	67	86	
11 00	84	94/80	-	80	70	88	gem
12 00	102/80	83	-	82	70/80	88	back
1 00	65/80	83	—	82	70/80	88	at 2 00 PM
2 00	64/80	83	—	82	86	86	160
3 00	110/80	83	—	80	89	85	160
4 00	84	80		80	92/80	44/80	160
5 00	72	83		80	70	72	160
6 00	80	80		83	70	80	160
7 00							
6/17/13							
2 00	80	81		82	69	80	160
4 00	80	81		82	62/80	76	160
6 00	80	82		82	78	74	160
8 00	88	82		80	54/80	80	160

Ivory Disc

6-16-	1020 -	76	
	1200	75	Mr. E. put oil on gov't. speed fell to 70.
	1230	80 →	Put oil on governor worm and speed rose to 80
	200 PM PM	80	
	400 "	80	
	600 74-	79	put oil on worm and the speed did ~~not~~ go up -
	800	82	
	1000	88	
	1200	84	
6/17/13	200	81	
	400	73	put oil on worm sh aft
	600	73	
	800		
	10		
	12		
	2		
	4		
	6		

Ivory Disc Governor

6/16/13	10 am	76	
	12 "	75	Mr. E. put oil on worm shaft. He first put oil on governor and speed fell to 70
	1230	80	
	200 PM	80	
	400 "	80	
	600 "	74-79	oil on governor shaft worm.
	800 "	82	
	1000 "	88	
	1200 "	84	
6/17/13	200 "	81	
	400 "	73	put oil on governor worm
	600	73	
	800	73	oil on governor on worm.
	1000	70	
	1200	73	
	200	76	
	400	70	
	600	74	
	800	74	
	1000	76	
	1200	74	
6/18/13	200	75	put oil on governor worm
	400	76	
	600	77 Over	

Ivory Disc.

800	–	80
1000	–	79
1200		76
200	–	79
400		72
600		78
800		76
1000		72
1200		73
6/19/13 200		79
400		76
600		76
800		76
1000		79
1200		81
200		80
400		79
600		76

{put oil on governor rollers

6/18/13

Time	1	2	3	4	5	6	7
1000	81	82	–	82	82	80	160
1200	82	53	–	82	82	90/80	160
200	80	80		84	78	80	160
400	86	84	–	84	86	110/80	160
600	80	86	–	82	10/80	56/80	160
800	78	84	–	81	84	89	160
1000	89	81	–	81	86	90/80	160
1200	90/80	82	–	82	81	83	160
200	83	81	–	82	85	86	160
400	84	81	–	84	91/80	87	160
600	89	82	–	83	73	93/80	160
800	92/80	90/80	–	80	62/80	106/80	160
1000	86	100/80	–	80	80	82	160
1200	89	84	–	85	85	102/80	160
200	92/80	87	–	86	87	88	156
400	112/80	80	–	86	80	90/80	156
600	88	84		86	87	76	156
800	86	80		86	88	74	158
1000	87	79		86	89	73	160
1200	88	77		93/80	96/80	73	156
6/19/13							
200	82	78		84	67/80	72	154
400	97/80	79		79	78	71	152
600	85	79		79	80	72	152
800	114/80	78		88	79	88	168
1000	80	80		88	80	Spring Brake 90	168

7	8	9	10	Remarks.
Gem	150A	A-60	Ivory Disc	on No. 10.
600	82		76	No oil put on
	82	70		governor
	83	Works	79	worn all
	7	for	79	night
200	106	Again	79	
400	96		81	
	94		84	
800	100		84	
900	100/80			
1000	88		88	
1100	89		86	
1200	89		84	
100	88		86	
	86		88	
300	88		86	
400	88		86	
500	88		88	
600	88		88	
700	92		88	
800	92		88	
900	95		79	
1000	94		80	3 three sheets

	1	2	3	4	5	6	
	Machi						
	#	#	#	#	#	#	
6/19/13	979	968	630	981	972	980	Gem
1200	86	80		95 80	86	—	
200	82	80	Works	77	79		
400	82	80		87	80		
600	84	84		84	76		
800	81			83	82		
1000	83	79		84	82		
	83	80		84	83		
	83	80		84	82		
	83	79		84	82		
00	84	81		85	83		
900	82	84		76	80		
1000	80	84		82	82		
1200	83	85	—	80	82	—	
200	81	81		80	82		
400	83	81		82	87		
600	80	80		85	86	80	
800	78	80	86	84	86	104/80	
1000	72	900 Spring	94/80	92/80	85	92/80	
	76	Broke	85	83	83	84	
6/20/13		while					
200	74	running	87	86	85	87	
400	72		88	90/80	83	84	
600	70		87	77	82	86	
800	62/80		86	82	90/80	90/80	
1000	112/80		88	86	78	80	(1.1)

Date	Time	Generator R.P.M. with record
6-20-13	12 00	160
"	2 00	160
"	4 00	160
"	6 00	160
"	8 00	160
"	10 00	156
"	12 00	156
6/21/13	2 00	158
"	4 00	160
"	6 00	160
"	8 00	160
"	10 00	150

12 New Ivory Cushion Disc

Date	Time	R.P.M.	
6-20-13	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00	80	
"	1 00	80	
"	2 00	83	
"	3 00	84	
"	4 00	84	
"	5 00	85	
"	6 00	85	
"	7 00	92	
"	8 00	93	
"	9 00	94	
"	10 00	91	
"	11	93	
"	12	94	
6/21/13	1 00	93	
"	2	93	
"	3	94	
"	4	90	
"	5 00	88	
"	6 00	84	
"	7 00	90	6/21/13 10 am
"	8 00	88	Sent to Shop
"	9 00		to fix governor
"	10		shaft spotted

11 Special Ivory Points

Date	Time	R.P.M.	
6-20-13	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00	80	
"	1 00	80	
"	2 00	80	
"	3 00	80	
"	4 00	80	
"	5 00	80	
"	6 00	80	
"	7 00	80	
"	8 00	80	
"	9 00	80	
"	10 00	80	
"	11 00	81	
"	12 00	81	
6/21/13	1 00	81	
"	2 00	81	
"	3	81	
"	4 00	82	Sent to shop to have gov. shaft spotted 6/21/13 1000 am
"	5 00	82	
"	6 00	82	
"	7 00	82	
"	8 00	83	
"	9 00	83	
"	10 00		

(115)

Date	Time	A-150	Overflow
6/21/13	11 00	94	82
"	12 00	94	84
6/21/13	1 00	94	83
"	2 00	93	84
"	3 00	94	82
"	4 00	94	81
"	5 00	93	83
"	6 00	91	84
"	7 00	92	80
"	8 00	92	80
"	9 00	92	80
"	10 00	90	82
"	11 00	90	82
"	12 00	90	82
"	1 00	90	82
"	2 00	94	75
"	3 00	94	70
"	4 00	94	70
"	6 00	94	70
"	7 00	96	70
"	8 00	98	73
"	9 00	96	71
"	10 00	98	74
"	11 00	97	74
"	12 00	97	75

Discontinued

A-60 Machines

	1.	2.	3.	4.	5.	6.	7.
	979	968	630	981	974	980	Germ
6/21/13 8 00 am	62/80	out	86	82	90-80	90-80	160
10 am	112/80	"	[illegible]	76	78	80	160
12 "	100/80	"	88	90-80	81	80	176
2 PM	90/80	"	90/80	86	81	90	160
4 "	88		76	[illegible]	[illegible]	74	160
6 "	86		78	86	84	76	160
8 "	85		78	87	82	68/80	160
10 "	88		82	88	84	79	158
12 "	84		82	86	82	83	160
6/22/13 2 AM	84		84	88	82	85	160
4 "	86		86	86	81	86	160
6 "	87		85	88	82	83	162
6/22/13 8 "	86		86	87	82	91/80	mitchel
10 "	85		90/80	89	83	100/80	160
12 "	85		76	84	82	85	160
2 PM	86		62/80	87	85	83	160
4 "	88		82	88	81	82	160
6 "	89		82	86	84	86	162
8 "	89		82	88	83	84	160
10 "	110/80		80	75	84	82	160
12 "	72		84	59/80	84	80	160
6/23/13 2 AM	72		83	84	80	86	160
4 AM	75		83	86	81	84	160
6 "	112/80		86	84	84	86	160
8 "	110/80		84	86	86	86	162
10 AM					over 4		over

Gem

Date	Time	R.P.M	Remarks	Note here any Remarks – such as oiling etc
6/23/13	12 00			
	2 00			
	4 00			
	6 00			

Ivory Cushion Disc

Date	TIME	R.P.M.	
6/21-13	6 00	80	Adjusted
"	7 00	80	
"	8 00	84	
"	9 00	84	
"	10 00	84	
"	11 00	82	
"	12 00	79	
6/22/13	1 00 AM	73	
"	2 00 "	77	
"	3 00 "	66	
"	4 00 "	69	
"	5 00 "	68	
"	6 00 "	70	
"	7 00 "	72	
6/23/13	8 00 "	62–80	Adjusted
"	9 00 "	80	
"	10 00 "	80	Grinding noise seems to be in gears
"	11 00 "	80	May be in governor as it is dry
"	12 00 "		
"	1 00 PM		
"	2 00 "		Put oil on governor but noise continues.
"	3 00 "		
"	4 00 "		Mr. Luter over also wire taken down
"	5 00 "		
"	6 00 "		

Date	TIME	Ivory Disc R.P.M.	Remarks	Fibre Disc R.P.M.	Remarks	Ivory Gov A-60 #909
6/22/13	1 00 AM	96		96		
"	2 00 "	73		98		
"	3 00 "	74		97		
"	4 00 "	72		96		
"	5 00 "	73		97		
"	6 00 "	72		97		
"	7 00 "	72		95		
6/23/13	8 00 "	71		98		
"	9 00 "	76		98		
"	10 00 "	72		99		
"	11 00 "	73		95		
"	12 00 M	73		96		
"	1 00 PM	73		95		
"	2 00 "	71		93		
"	3 00 "	70		95		
"	4 00 "	72		95		80
"	5 00 "	73		94		80
"	6 00 "	72		96		80
"	7 00 "	76		86		62/80
"	8 00 "	76		86		96/80
"	9 00 "	76		87		80
"	10 00 "	72		87		80
"	11 00 "	72		87		80
"	12 "	76		94		80
6-24-13	1 00 "	76		92		80
"	2 00 "	74		92	Over. 1 Page.	80

Date	Time	Ivory Points R.P.M.	Remarks	Ivory Cushion Disc	Remarks
6/23/13	2 00 AM	80	adjusted	1	Ball in governor shaft was worn turned off pin & ball.
"	3 00 "	80			
"	4 00 "	80			
"	5 00 "	80		530-80	
"	6 00 "	80		600 80	
"	7 00 "	77		700 80	
"	8 00 "	77		800 80	
"	9 00 "	70		900 70	
"	10 30 "	74	Must put oil in governor	1000 80	
"	11 00 "	74	Slowed down at first but run up came to 73,	1100 80	
"	12 00 "	72		1200 80	
6-24-13	1 00 AM	72		78	
"	2 00 "	73		76	
"	3 00 "	73		74	
"	4 00 "	73		70	
"	5 00 "	74		72	
"	6 00 "	70		73	
"	7 00	66		68	
	8 00	65		66	
	9 00	530-73 800 73		76	
	10 00				
	11 00				
	12 00				
	1 00				
	2 00				
	3				

Ivory Disc				Fibre Disc		Ivory A-60
Date.	Time.	R.P.M.	Remarks	R.P.M.	Remarks	#909
6-24-13	3 00	74		94		80
"	4 00	72		98		82
"	5 00	74		94		80
"	6 00	75		95		80
"	7 00	73		98		80
"	8 00	70		102		81
"	9 00	72		102/80	Adjusted	80
"	10 00		Took drum			
"	11 00	adjusted 80	New governor belts.			
6/25	1	80				
"	2	80				
"	3	80				
"	4	80				
"	5	80				
"	6	80				
"	7	80				

	1	2	3	4	5	6
6/24/13	979	968	630	981	974	980
10 am	80		83	87	85	81
12 "	86	108/80	86	88	86	86
2 PM	85	79	86	88	86	87
4 "	86	101/80	86	88	84	89
6 "	86	78	86	[illegible]	80	89
8 "	82	66/80	90/80	86	84	80
10 "	82	76	90	82	82	82
12 "	80	76	84	70/80	82	91/80
6/25/13 2 00	80	78	84	84	86	82
4 00	82	78	86	85	84	84
6 00	92/80	76	78	86	82	82
8 00	80	79	86	88	84	103/80
10 00	80	76	85	87	84	82
12 00	82	80	86	87	84	82
2 00	81	78	86	86	85	88
4 00	82	80	88	86	86	90/80
6 00	82	79	90/80	86	90/80	80
8 00	80	70	78	86	84	86/80
10	80	68/80	84	84	82	80
12	82	80	86	86	86	78
6/26/13	84	82	78	90/80	86	75
4	86	88	90/80	84	89	76
6	92/80	90/80	82	86	88	77
8	82	108-80	89	87	84	82
10		78				
12						

12 M – 6/24/13
Ivory points – adjusting device loose sent to mr. Luhr. – Loose construction – adjustment not pos. also liability to slip from vibration –.

IVORY POINTS

Date	Time	R.P.M	Remarks.
6/24/13	1000 AM.	80	10 A.M. Adjusted speed – also adjusted governor shaft allowing a little more end play.
	1100	86	
	1200		
	100 PM		Speed was taken 20 minutes apart both were 80.
	200 "		Needs Adj
	300 "		
	400 "	80	Ran up to 87 inside
	500 "	84	Last hour 80
	600 "	86	Readjusted to 80 at 430. P.M.
	700 "		Mr. Luhr [illegible]
	800 "	80 adjusted	To Shop. 6.45 P.M.
	900 "	77	Puts on new governor
	1000 "		Received 1:00 P.M.
	1100 "		Mach. removed to shop [illegible]
	1200 "	adjusted 80	more. 9:45 Back 12:00 P.M.
6/25	100 AM	80	
	200 "	80	
	300 "	80	
	400 "	80	
	500 "	80	
	600 "	80	
	700 "	80	
	800 "	80	
	900 "	80	
	1000 "	80	

Ivory Disc with Cushion

Date	Time	R.P.M.	Remarks.
6/24	10⁰⁰ A.M.	70	73 at 9⁰⁰ a.m.
	1100 "	72	Speed Variable.
	1200 "	70	"
	100 PM	78	
	200 "	77	
	300 "	77	
	400 "	76	
	500 "	77	
	600 "	76	
	700 "	76	
	800 "	72	
	900 "	72	
	1000 "	70	
	1100 "	66	
	1200 "	70	
6/25/13	100 AM	66	
	200 "	65	
	300 "	65	
	400 "	67	
	500 "	60	
	600 "	60	
	700 "	66	
	800 "	68	
	900 "	65	
	1000 "	68	

Fibre Friction

Date	Time	R.P.M.	Remarks.
6/24/13	9.00 AM	80 →	Adjusted speed because it was up to 102. Last adjustment 5.30 P.M. 6/23/13.
	10 "	86	
	11 "	82	
	12 "	84	Spring broke while
	1 PM	88	machine was running 6:45
	2 "	88	PM
	3 "	88	
	4 "	86	
	5 "	89	
	6 "	91	
	7 "		
	8 "		
	9 "		
	10 "		
	11 "		
	12 "		
6/25/	1 AM		
	2 "		
	3 "		
	4 "		
	5 "		
	6 "		
	7 "		
	8 "		
	9 "		

Ivory Disc
on
A-60 No 909.

			Remarks.
6/24	900 AM	80	adjusted at 900 PM. 6/23/13.
	1000 "	60	The speed adj. mech. is n.g.
	11 "		
	12 "		
	1 PM		Speed fell suddenly. The taper on adjusting rod goes under adjusting lever.
	2 "		
	3 "	81	
	4 "	79	
	5 "	58	adjusted.
	6 "	72	
	7 "	76	The adjustment on this machine is no good. ~~The~~ It was put on as an experiment but not properly developed.
	8 "	75	
	9 "	72	
	10 "	66	
	11 "	64	
	12 "	61	
	1 AM		
	2 "		
	3 "		
	4 "		
	5 "		
	6 "		
	7 "		
	8 "	57	
	9 "	76	
	10 "	57	

Gem Machine Amberola 10

Date	Time	R.P.M.	Remarks.
6/24/13	800 AM	162	
"	1000 "	162	
"	12 M	162	950 records since new pinion was put in 12 M. 6/20/13
"	2 P.M.	162	
"	4 "	162	new belt 6/23/13 10 AM
"	6 "	162	mandrel loosened "
"	8 00	160	310 P.M. 1000 records since new pinion.
"	10 00	160	
			Spring Broke 10:50 P.M. playing record.
			1130 records on new pinion
			2000 records on new spring - put in 6/16/13
			New pinion still in good condition.
	Machine sent to Lewis Drafting Room. To be sent to Nicolai for new main spring.		

IVORY DISC
IVORY Secured to Brass

6/24/13	12 PM	80	adjusted – new balls on governor.
6/25/13	1 AM	80	
"	2 "	80	
"	3 "	80	
"	4 "	80	
"	5 "	80	
"	6 "	80	
"	7 "	80	
"	8 "	80	
"	9 "	80	
"	10 "	80	
"	11 "	80	
"	12 M	80	
"	1 PM	80	
"	2 "	80	
"	3 "	80	
"	4 "	80	
"	5 "	80	
"	6 "	80	
"	7 "	80 +	
"	8 "	80 +	
"	9 "	80 +	
"	10 "	80 +	
"	11 "	80 +	
	12 PM	80 +	
26-13	100 am	80 +	

IVOR V Points

Continued from 6 pages back.

Date	Time	R.P.M.	Remarks.
6/25/13	11 AM	80	Equipped with new
"	12 AM	80	mights 6/24/13 12 P.M.
"	1 P.M.	80	adjusted " "
"	2 00	80	
"	3 00	80	
"	4 00	80	
"	5 00	80	
"	6 00	80	
"	7 00	80	
"	8 00	80	
"	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00	80+	
6-26-13	1 00	80+	
"	2 00	80+	
"	3 00	80+	
"	4 00	80+	
"	5 00	80+	
"	6 00	80+	Copied
"	7 00	80+	6 pages back
"	8 00	80	
"	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00		

Cushion Ivory Disc.
Cont. from 6 pages back.

6/25/13	12 00	70
	100 PM	70
	200	70
	300	70
	400	70
	500	66
	600	68
	700	68
	800	68
	900	68
	1000	66
	1100	66
	1200	65
6/26	100 AM	66
	200	65
	300	68
	400	68
	500	70
	600	70
	700	70
	800	78
	900	78
	1000	79
	1100	79
	1200	78
	100 PM	79

IVORY DISC
ON
A-60. No. 909

6/25	11 am	57	
	12 am	54	
	1 Pm	53	
	2 "	66	Stopped
	3	53	
	4	63	
	5	53	
	6	Stopped	This machine was stopped because the adjusting mechanism is V.G. Further running is useless unless the above is changed

Fibre Friction
New Main Spring.

Date	Time		
6/25	1100AM	80	
"	1200	80	
"	1PM	80	
"	2 "	80	
"	3 "	80	
"	4 "	87	
"	5 "	88	
"	6 "	—	
"	7 00	90	
"	8 00	96	
"	9 00	96	
"	10 00	96	
"	11 00	96	Stopped.
"	12 00	97	
6/26	1 00	97	
"	2 00	97	
"	3 00	96	
"	4 00	97	
"	5 00	98	
"	6 00	97	
"	7 00	97	
"	8 00	96	
"	9 00	98	
"	10 00	98	
"	11 00	100	
"	12 00	108	

A-60 Machines.

6-26-73	1.	2.	3.	4.	5.	6.
10 AM	82	78	92-80	89	86	81
12 M	82	88	83	88	88	82
2 PM	83	81	83	Spring	87	82
4 "	83	83	84	1:40 PM.	86	81
6 "	83	76	84	—	86	81
8 00	84	76	84	—	84	80
10 00	90	92	72	—	80	80
12 00	86	84	71	—	1[illegible]	[illegible]
2 00	91/80	88	72	—	82	84
4 00	83	87	70/80	—	84	85
6 10	Spring	76	77/80		90/80	74/80
8 00	Break	80	79		102/80	81
10 00	5:45 A.M.	79	78	96-8[illegible]	8[illegible]	83
12 00	[illegible]	[illegible]	73	87	82	82
2 00 PM	80	87	71	87	82	82
4 00	80	86	71	87	82	85
6 00	80	86	72	[illegible]	81	85
8 00	84	85	73	92/80	84	86
10 00	80	82	72	[illegible]	80	80
12 00	84	76	72	80	82	83
2 00	86	88	70/80	91/80	85	84
4 00	88	90/80	80	84	88	86
6 00	90/80	84	78	90/80	86	80
8 00	82	86	82	80	81	83
10 00						
12 00						

Ivory Diss

Date	Time	RPM
6-26-13	200	80+
	300	80+
	400	80+
	500	80+
	600	81+
	700	81+
	800	81+
	900	82
	1000	82
	1100	82
	1200	83
6-26-13	100 PM	83
	200	83
	300	84
	400	83
	500	82
	600	83
	700	83
	800	82
	900	82
	1000	82
	1100	82
	1200	82
6-27-13	100	82
	200	82
	300	82

Ivory Points

6/26	2AM	80	
"	3 00	80	
"	4 00	80	
"	5 00	80	
"	6 00	80	
"	7 00	80	
"	8 00	80	
"	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00	80	
"	1 00	80	
6/27/13	2 00	80	
"	3 00	80	
"	4 00	80	
"	5 00	80	
"	6 00	80	
"	7 00	80	
"	8 00	80	
"	9 00	80	
"	10 00	80	
"	11 00	80	
"	12 00	80	
"	1 00	80	
"	2 00	80	
"	3 00	80	

FIBRE FRICTION
NEW MAIN SPRING

3/26/10	1:00 PM	104	
	2:00 "	80	Unpacked
	3:00 "	80	
	4:00 "	81	
	5:00 "		Stopped
	6:00 "		

CKCJ

A-80 Mahogany Cabinet
Equipped with Dooy Point Gate
new adj. device.

6/16	5PM	~~80~~	
"	6 00	80	A slight noise
"	7 00	80	from governor not
"	8 00	80	noticeable in open
"	9 00	80	machine
"	10 00	80	
	11 00	80	
"	12 00	80	
6-27-13	1 00	80	
"	2 00	80	
"	3 00	80	
"	4 00	80	
"	5 00	80	
"	6 00	80	
"	7 00	80	
"	8	80	
"	9	80	
"	10	80	
"	11	79	
"	12	79	
"	1 PM	79	
	2	79	
	3	78	
	4	78	
	5	78	
	6		

6/27/13.

1230 – Runs more quietly than others

1213 Quiet but not as good as 1230.

1198 Quite noisy in gov. pinion

1333 – Main spring broke at start – when returned noise in gov. pinion – gov. revolves unsteadily.

1233 – slight noise in gov. pinion governor true.

1214 Quiet

1198 – slight knock – gear in mesh with gov. pinion turns out of true

1213 – slight noise – comp. good

1230 – Very quiet.

Ambrella VI.

		1230	1213	1198	1333	1233	1214
Date	Time	1	2	3	4	5	6
6/26/13	7 00	160	160	160	Spring	160	160
"	8 00	160	160	160	broke.	160	160
"	10 00	160	160	160	–	160	160
"	12 00	160	160	160	–	160	160
6-27-13	2 00	160	160	160	–	160	165
"	4 00	160	160	160	–	[illegible]	160
"	6 00	160	160	160	–	160	160
"	8 00	160	156	167		160	160
"	10 00	160	160	160	160	160	160
"	12 00	160	160	165	164	160	160
"	2 00 P.M.	160	160	162	168.	166	160
"	4 00 "	160	157	163	162	168	160
"	6 00 "	160	157	163	164	164	160
"	8 00	160	160	166	167	[illegible]	160
"	10 00	160	160	168	162	162	160
"	12 00	160	160	160	162	162	160
"	2 00	160	160	165	164	164	160
"	4 00	160	160	162	165	162	160
"	6 00	160	158	160	160	160	160
"	8 00	160	155	163	168	164	160
"	10 00	160	156	162	160	163	160
"	12 00	162	159	160	167	162	160
"	2 00 P.M.	162	160	160	168	164	160
"	4 00 "	163	158	164	171/160		
"	6 00 "						165

Gem. Mach.

Date	Time	R.P.M.	
6-26-13	8 00	200	Spring broke 7:45 a.m.
"	10 00	200	after playing 10½ records
"	12 00	200	both sides down spring
6-27-13	2 00	200	3rd spring
"	4 00	200	out broken
			5 spring 11 AM
			4th spring
11/2/13	4 00		Back

Spray Paint

Date	Time	R.P.M
6-27-13	400	80
"	500	80
"	600	80
"	700	80
"	800	80
"	900	80 +
"	1000	80
"	1100	80
"	1200	80
"	100 PM	80
"	200	80
"	300	80
"	400	80
"	500	80
"	600	80
"	700	80
"	800	80
"	900	80
"	1000	80
"	1100	80
"	1200	80
6-28-13	100	80
"	200	80
"	300	80
"	400	80
"	500	80

Ivory Disc.

Date.	Time	T. & A.
1-24-13	4 00	82
"	5 00	82
"	6 00	82
"	7 00	82
"	8 00	83
"	9 00	82
"	10 00	82
"	11 00	82
"	12 00	83
"	1 00	82
"	2 00	82
"	3 00	82
"	4 00	82
"	5 00	82
"	6 00	82
"	7 00	82
"	8 00	82
"	9 00	82
"	10 00	82
"	11 00	82
"	12 00	82
1-25-13	1 00	82
"	2 00	82
"	3 00	82
"	4 00	83
"	5 00	83

A-80 IVORY POINTS
NEW ADJUSTING DEVICE

Date	Time	R.P.M.	Date	Time	R.P.M.
9/27	6 P.M.	79	6-28-13	12	
"	7 00	79	"		
"	8 00	79	"		
"	9 00	79	"	9	
"	10 00	80	"		
"	11 00	80	"		
	12 00	80	"		
9-28-13	1 —	80	"		
	2 00	80	"		
	3 00	80	"		
"	4 00	80	"		
"	5 00	80	"		
"	6 00	80	"		
"	7 00	80	"		
	8	80			
	9	80			
	10	80			
	11	80			
	12	80			
	10 P.M.	80			
	2 "	80			
	3 "	79			
	4 "	78			
	5 "	77			
	6 "	77			

IVORY POINTS

Date	Time	R.P.M.
6.8.13	600	80
"	700	80
	8	80
	9	80
	10	80
	11	82
	12	82.5
	1	82
	2	82
	3	83
	4	84
	5	84
	6	84
	700	84
	800	84
	900	84
	1000	84
	1100	84
	1200	83
6/24	100	83
	200	81
	300	81
	400	81
	500	81
	600	81
	700	

[ms]

Ivory Disc

Date	Time	Temp.
8-28-13	600	83
"	700	84
"	800	83
	9	83
	10	83
	11	83
	12	83
	1	84
	2	84
	3	84
	4	84
	5	84
	6	84
	700	84
	800	84
	900	84
	1000	84
	1100	84
	12	83
8-29-13	100	83
	200	83
	300	83
	400	83
	500	83
	600	83
	700	83

Columbia Record on Victor.
Played
50 Soft needle - Mr. Hutchison
noticed surface noises.
50-100 Mr. H. same remarks
Loud needles

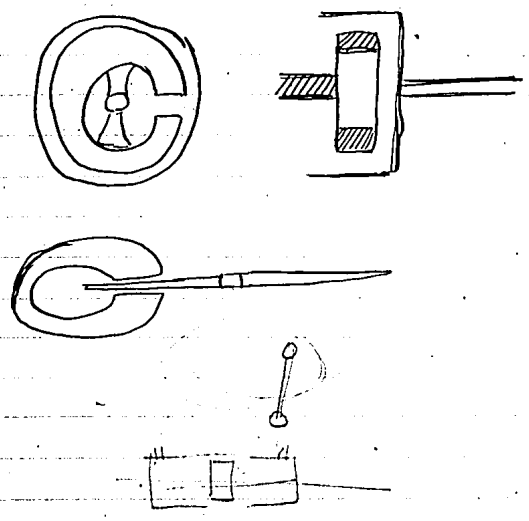
100-150 Mr. Edison - noticed diff.
(Soft needles) immediately -

150-200 Loud needles - Mr. Edison
"Rotten"

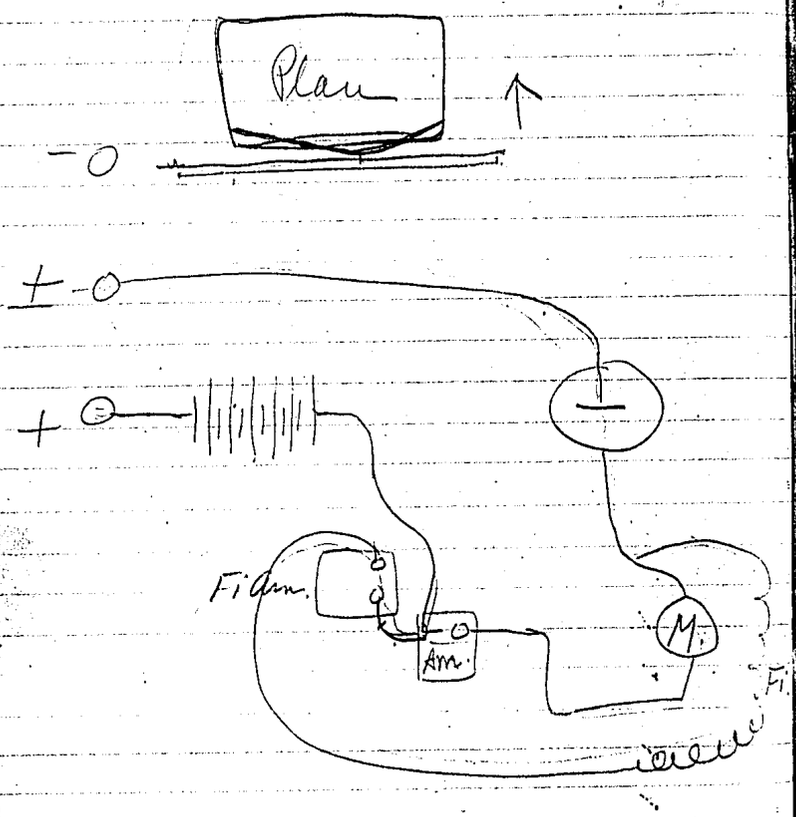
200-250 - soft needles - Mr. E.
very bad - examined under
microscope - said good
it is not up and down
cut - very bad - will ex-
amine further - stop tests

Record was played 1/2 way
needle changed each time
Test made by Halpin.

Volts	Amps	Watts	Ft. Cand.
8.1	.120		

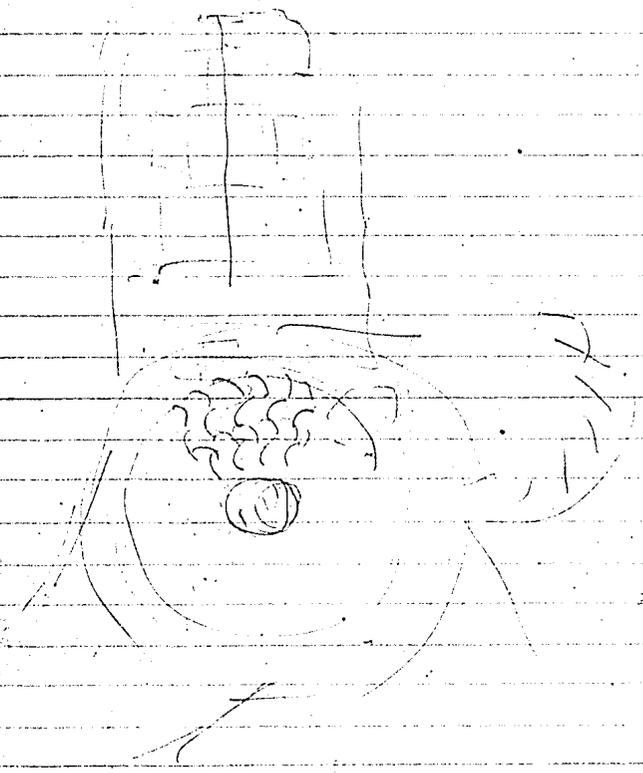


$$\begin{array}{r} 100 \\ 60 \\ \hline 6000 \end{array}$$



Base – 8 1/8 × 4" × 1"
6 × 2 5/16 × 3 3/4

#1262 - 63.
model 20.



$\sqrt{} \times \cancel{A} =$

$\sqrt{} \times \cancel{A} =$

J. P. Harpin

$\frac{110}{70}$

$\frac{35}{}$ = 2 3/5

44

39

57

[ITEM(S) FOUND IN BOOK]

Excello arc Lamp Test.
April 8 7 hrs chg.
4/8/13 – 7 hrs. @ 7 amps
Disch 5 30 P.M 4 amps
8.00 am. 1½ amps 6 volts.
4/9/13

4/9/13 9⅓ hrs. chg.
Disch at 4 amps at 5 30 P.M.
31 volts start
8.30 am 4/10/13 – 1½ amps 6 volts

4/10/13 4½ hrs at 9 amps.
4/11/13 7½ " " 9 "
4/12/13 1 " " 9 "
Disch 4/12/13 and took readings
ran 6 hrs 15 min. when voltage
fell to 1 v. p. cell – rate 7.5 to
7 amps.

4/14/13 – 7 hrs ch. 9 amps
Disch. 5 30 P.M to 8 30 am 4/15
Started at 3.7 amps 29 v.
ended at 1½ " 4 v.

4/15/13 8 hrs charge
Disch 5 40 P.M. 30 v. 3 amps to
8 10 a.m. 24 v. 2 "
5 30 volt 20 watt lamps

[ITEM(S) FOUND IN BOOK]

4/16/13 - Chged - 7½ hrs at 9 amps.
Disch started 4¹⁵ 3 amps 29.5 V.
end — found 16 lamps
in circuit and cells completely
discharged — pouring one turned
with test. 4/17/13

4/17/13. Charged 8¼ hrs.
Disch 5³⁰ 3 amp 29.5 V.
end - 8⁴⁵ 2.5 " 20 V.

4/18/13 Charged 8 hrs.
Disch. 5⁰⁰ 3 amps 29 V
end 8⁰⁰ 2 " 20 V.

Charged 4/19/13 & 4/21/13 Disch.
4/21/13 5³⁰ ~~to~~ 8³⁰ am, 4/22/13

Took down for hanging outside
on 4/22/13.
Returned to original place
4/23/13.

Continued charging & Disch.
at 9 amp and 3 amps respect.

[ITEM(S) FOUND IN BOOK]

Charged Sat. 4/26/13 & Mon. 4/28/13
Disch 4/25/13 to 4/29/13.

On charge at 9:30 4/29/13. at
19 amps.
Off at 4:30 - 88v. 38v. 10 amps.
Disch started 4:30 4/29/13
3.0 amps. 31 volts 6 lamps.
Took off at 8:30 am 4/30/13.
11 volts 2 amps.
Put on charge at 8:30 am.
4/30/13.

[ITEM(S) FOUND IN BOOK]

9/29/13

New Motor in A-60

American Steel and Wire Co. Spring

10" Record

1st time 80-80-80-80
2nd time 80-80-80-80
3rd time ——— 79

12" Record

1st time 80-80-80-80-80-80
2nd time 80-79-79

[ITEM(S) FOUND IN BOOK]

Mrs. Miller. | 12" Record A 60 Yarder Co.

I. 80 – 80 – 80 – 80 – 80 – 80 – 40 = ½ Min.

II. 80 – 80 – 78 ←——————→

10" Record + 60 Yarder Co.

I. 80 – 80 – 80 – 80 – 40 = ½ Min.

II. 80 – 80 – 79 – 79 – 40 = ½ "

III. ←——————→ 77

12" Record 60 Yarder Co.

I. 80 – 80 – 80 – 80 – 80 – 80 – 40 = ½ Min

II. 80 – 79 – 78

10" Record + 60 Yarder Co.

I. 80 – 80 – 80 – 80 –

II. 80 – 80 – 80 – 80 –

III. ←——————→ 79 –

12" Record + 60 Yarder Co.

I. 80 – 80 – 80 – 80 – 80 – 80 –

II. 80 – 79 – 79 –

[ITEM(S) FOUND IN BOOK]

10-inch record

1st record 80 - 80 - 80 - 26½ min. 5 sec. between each

2nd record 80 - 80 - 79 - 38½ min.